

The Incidence and Context of Tobacco Use in Popular Movies from 1988 to 1997

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Objective. The aim of this study was to describe tobacco use in a large representative sample of movies.

Methods. We analyzed the content of the top 25 box office hits per year from 1988 to 1997. Outcomes included the number of occurrences of tobacco use, the time tobacco use appeared on screen, the context in which tobacco use was portrayed, and characteristics of smokers compared with nonsmokers.

Results. Eighty-seven percent of the movies portrayed tobacco use, with a median of 5 occurrences per film. Tobacco use was not related to year of release or box office success of the movie. R-rated movies had the greatest number of occurrences (median = 8.5; $P < 0.05$) and were most likely to feature major characters using tobacco (81%, $P < 0.001$). Among major characters, males were more likely to use tobacco than females (28% vs 17%, $P < 0.001$), but there was no difference in the prevalence of tobacco use by age, race, or socioeconomic status. Tobacco users were typically adults (96.3%) who were more likely to engage in a variety of other risk behaviors. Most tobacco use involved cigarettes or cigars (89.5%). Motivations for on-screen smoking included agitation (20.1%), sadness (5.1%), happiness (15.3%), and relaxation (17.1%). Characters were often shown smoking while confiding in others (30.7%) or in social/celebratory situations (18.0%). Negative reactions to tobacco use were rarely shown (5.9%) and negative consequences resulting from tobacco use were depicted for only 3.4% of the major characters who used tobacco.

Conclusion. Despite increasing anti-smoking sentiments in our society, negative reactions to smoking are rare and there is no evidence that tobacco use in movies has declined over the past decade. Movies continue to

model smoking as a socially acceptable behavior and portray it as both a way to relieve tension and something to do while socializing. By depicting positive images of tobacco use, movies have the potential to influence adolescent smoking behavior as much as any other environmental exposure, such as family or friend smoking. © 2002 American Health Foundation and Elsevier Science (USA)

INTRODUCTION

Movies and other forms of media shape views of what is “cool,” attractive, and grown-up—all things adolescents try to be. Extensive research has demonstrated the importance of environmental and social influences on teen smoking, including family and peer smoking [1], cigarette advertising [2], and cigarette promotional items [3,4]. Several investigators have demonstrated that adolescents may take up smoking to attain a certain image or enhance their identity [5–8]. To the extent that portrayals of smoking in movies are consistent with adolescents’ ideal self-images or prototypes of the ideal group member, on-screen tobacco use by stars may motivate adolescents to smoke. Supporting this premise are two studies of demographically diverse adolescents that have linked adolescent smoking and susceptibility to becoming a smoker with the smoking behavior of their favorite movie stars [9,10]. Despite the enormous amount of time children and adolescents spend viewing movies [11] and the potential impact this may have on smoking, there have been relatively few studies of how tobacco use is modeled in this medium.

Available data suggest that tobacco use is pervasive in movies [12–14], even in films made for children [15], and that the amount of tobacco use portrayed has remained constant over time [12]. To date, most studies used a time sampling methodology [16], in which movies were divided into a series of 5-minute intervals

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and the number of intervals containing tobacco use was counted [12–14,17]. While this method is easily replicable and is not as time-intensive as coding each tobacco occurrence independently, 5-minute intervals do not correspond directly to scenes or meaningful blocks of time within a movie. Therefore, this methodological approach limits the ability to code contextual factors related to each tobacco occurrence. In this content analysis, we use scenes, rather than 5-minute intervals, to delimit tobacco occurrences. This provides a unit of time in which the narrative and action form a coherent whole. We believe that this represents a measure that is more consistent with what a viewer perceives and it allows us to code contextual factors related to each scene.

The purpose of this study is to provide a comprehensive description of tobacco use in a large representative sample of movies released over a 10-year period. In addition to counting the number of occurrences of tobacco use, we used multiple measures to characterize the context in which tobacco is used and the attributes of characters who do and do not use tobacco on-screen.

METHODS

We conducted a content analysis of 250 movies, representing the top 25 box office "hits" per year for the years 1988 through 1997. Box office ranking based on gross revenues was determined through a site on the internet that compiles box office data from multiple sources (<http://www.worldwideboxoffice.com>). Movie rating, total run time, and information on production companies were obtained from the Internet Movie Database (<http://www.IMDB.com>). Genre categories for the content analysis were selected after a careful review of the Internet Movie Database and several popular movie guides. Because these sources often list more than one genre for a movie, the coders chose one genre classification that best described each movie. Coded movies were either rented or purchased on video tape. Each movie was viewed in its entirety at least twice in order to code the overall characteristics of the movie and to identify every occurrence of tobacco use. Each occurrence of tobacco use or handling was then viewed multiple times to characterize the use and its context.

Measures of Tobacco Use

We used a count measure (number of occurrences), a timed measure (tobacco exposure time), and the prevalence of use by major characters to describe tobacco exposure in movies. For the purposes of this paper, we limited our analysis to include only occurrences of tobacco use (defined as smoking, chewing, or handling tobacco). Other forms of tobacco imagery such as billboards, signs, and ashtrays were not included. We did

this because we believe celebrity use is most likely to influence viewers, especially adolescents [18]. Each occurrence was delimited by the beginning and end of a scene. A scene was defined as a clear passage of time or change in location. We distinguished between two types of tobacco use: character use and background use. The number of occurrences sums both categories of use.

"Character use" includes tobacco use or handling by major or minor characters. Major characters are those who play leading roles and who are essential to the development of the plot. Minor characters are those who play an important role in the movie, but are not central characters in the story. An occurrence was coded each time a major or minor character used or handled tobacco in a new scene. For example, if one character used or handled tobacco multiple times within the same scene, this was counted only as one occurrence. If two characters used or handled tobacco in the same scene, this was counted as two occurrences.

"Background use" is defined as tobacco use or handling by "extras"—actors whose role in the movie was to help complete the setting. An occurrence of background use was coded when one or more ancillary actors used or handled tobacco in a new scene. For example, a bar scene featuring people smoking in the background was coded as one occurrence regardless of the number of ancillary actors smoking. When both character and background use occurred simultaneously, only the character use was counted. This was done to avoid overestimating the amount of tobacco use in movies and was based on the assumption that character use is most salient to the viewer.

"Tobacco exposure time" is defined as the number of seconds that any tobacco was used or handled on screen. For example, if a character smoked a cigarette during a scene that lasted several minutes, but the cigarette appeared on-screen only twice for 3 s each time, the tobacco exposure time for this occurrence was recorded as 6 s. In instances in which a portion of two or more occurrences overlapped, the timing of these occurrences was combined to avoid double counting the exposure. For example, if a scene contained 30 s of character use and 20 s of background use and the two occurrences overlapped by 10 s, the total tobacco exposure time for the two occurrences combined was recorded as 40 s.

Context of Tobacco Use

To describe the context of character use, we coded whether the tobacco use was relevant to the scene; specific motivations for characters to use tobacco within each scene; and activities characters were engaged in while using tobacco. We derived the major motives for tobacco use from the empirical literature on why people smoke, including negative affect, anxiety,

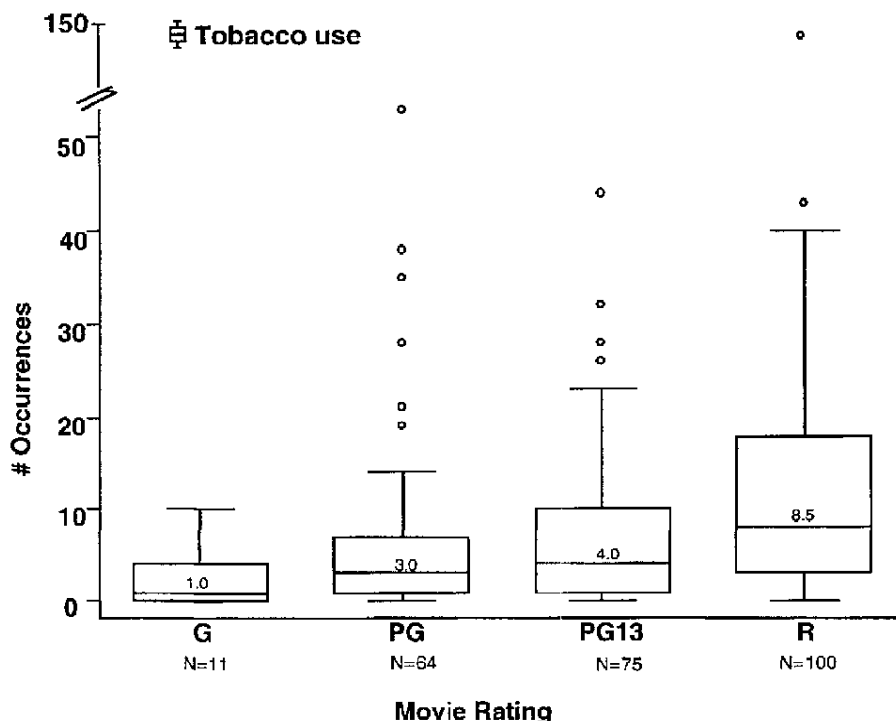


FIG. 1. Number of occurrences of tobacco use by movie rating.

celebration, environmental triggers, and social motives (such as trying to look older, peer pressure, and acting cool). Any occurrence of tobacco use could have multiple motives embedded within it. Similarly, more than one activity could be coded for each scene.

Attributes and Risk Behaviors Portrayed by Major Characters

For major characters only, we coded gender, race, socioeconomic status, and whether the star's name appeared on the front cover of the video box. We also coded whether each character engaged in any of the following risk behaviors at any time during the movie: tobacco use, alcohol use, drug use, violence, illegal activities, sexual affairs, reckless driving, dangerous acts, or gambling.

Reliability

Two coders were selected and trained to conduct the content analyses. To evaluate interrater reliability, 10% of the movies were coded by both coders. All measures reported in this paper had a minimum percentage agreement of 70%.

Statistical Analysis

One-way ANOVA with Bonferroni multiple comparison tests was used to test for mean differences in the number of occurrences and total tobacco exposure time by movie characteristics. Both outcome variables were

log transformed to normalize the distribution. Medians rather than means are reported because the data were highly skewed. χ^2 analyses were used to test for differences in proportions. Trend analysis was conducted to test for differences in the amount of tobacco exposure by year of movie release. Total tobacco exposure time and number of occurrences were entered as continuous variables for this analysis.

Sample Description

The sample included movies in four of the five rating categories established by the Motion Picture Association of America: 11 (4.4%) were designated G-rated films; 64 (25.6%) PG; 75 (30.0%) PG-13; and 100 (40.0%) R. Movies were classified in seven genre categories: 48 (19.2%) were action adventures; 21 (8.4%) were children's or family films (including animated movies); 79 (31.6%) were comedies; 56 (22.4%) were dramas; 9 (3.6%) were horror movies; 20 (8.0%) were mysteries; and 17 (6.8%) were science fiction movies. Of the 250 movies analyzed, 233 were produced by U.S. companies; 13 were produced by companies with partnerships in the United States and another country; and 3 were produced by foreign production companies.

RESULTS

Tobacco Use and Movie Characteristics

Overall, 87% ($N = 217$) of the movies contained tobacco use, with a median of 5 (Interquartile Range

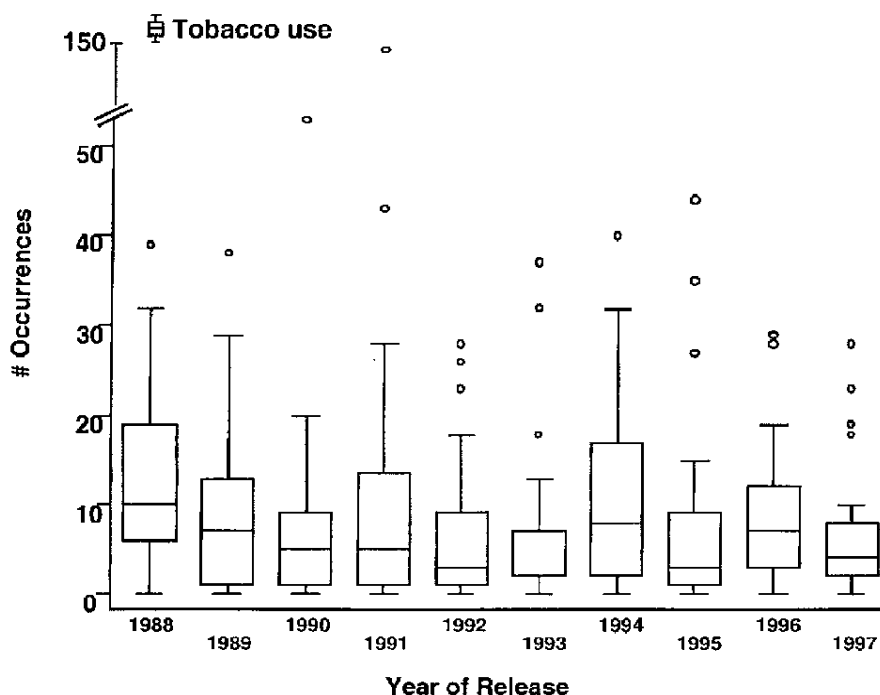


FIG. 2. Number of occurrences of tobacco use by year of release.

[IQR] = 1, 12) occurrences per film. While the number of occurrences of tobacco use increased by rating, only R-rated movies contained significantly more occurrences of tobacco use than all other ratings ($P < 0.05$) (Fig. 1). R-rated movies were also more likely to feature a major character using tobacco (81.0%) than movies in any other rating category (54.6% in G movies; 53.1% in PG; and 64.0% in PG-13; $P = 0.001$). Of all genres, dramas had the highest amount of tobacco use, with a median of 10 (IQR = 6, 23) occurrences. This was significantly higher than in children or family films (median = 1; $P < 0.001$), comedies (median = 4; $P = 0.001$), and science fiction films (median = 3.0; $P = 0.05$), but not action adventures, mysteries, or horror movies (medians = 6, 6, and 5, respectively). There was no identifiable trend in the number of tobacco use occurrences over the 10-year period (Fig. 2) and the amount of tobacco use was not related to box office success (Fig. 3).

Tobacco appeared on-screen for an average of 18 s per occurrence, resulting in a median total tobacco exposure time per movie of 1.4 minutes. The interquartile range was 0.3–3.7 min, indicating that, in 75% of movies, tobacco exposure time accounted for less than 4% of total screen time. As expected, this timed measure was highly correlated with the number of tobacco occurrences and showed similar associations with movie characteristics.

Types of Tobacco Occurrences

A total of 2,296 occurrences of tobacco use were identified in the 250 movies. The majority of these occurrences ($N = 1,609$) involved character use and slightly less than one-third ($N = 687$) involved background use (Table 1). The majority of tobacco occurrences in both categories of use involved cigarette smoking (69%), with cigar smoking representing the second most common type of tobacco used. Smokeless tobacco was rarely depicted in movies. Ninety-five percent of the occurrences of character use involved actual use; only 5.3% portrayed just handling or preparation of a tobacco product.

Context of Character Tobacco Use

Of the 1,609 occurrences of character use, only 16.2% contained tobacco use considered relevant to the scene; it was the major focus of the scene in only 5.0% of the occurrences. The vast majority of tobacco use was portrayed as experienced use (91.5%); rarely was it portrayed as a character's first use (0.3%) or a relapse from a previous quit attempt (0.5%). Negative reactions to tobacco use, including comments about health effects or gestures such as coughing, were depicted in only 5.9% of the occurrences. Only 3.7% of the occurrences featured adolescents smoking.

Mood state motivators for tobacco use included agitation (20.1%), sadness (5.1%), happiness (15.3%), and

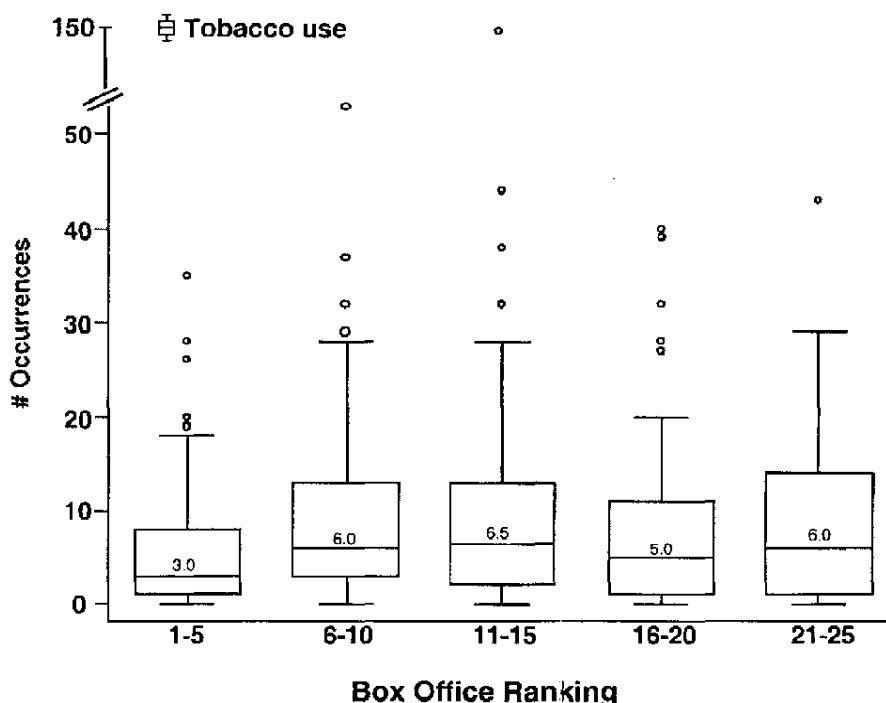


FIG. 3. Number of occurrences of tobacco use by box office ranking.

smoking for relaxation (17.1%). Characters were often depicted as pensive when smoking (31.4%). Social motives were less frequently portrayed. People smoked because of peer pressure or to fit in only 1.2% of the time, and they smoked because they were *trying* to appear tough, rebellious, or sexy in only 9.5% of the occurrences. Smoking following conflict or bad news occurred 5.3% of the time and ritualistic smoking (e.g., lighting a cigar to celebrate a victory) was portrayed 5.7% of the time.

The primary behavior characters engaged in while using tobacco was confiding in others (30.7%), such as

that which might occur during an emotional scene. People also smoked while socializing (12.5%), celebrating (3.2%), and partying (2.3%). Drug use rarely occurred alongside tobacco use (0.4%), but alcohol use was associated with smoking 12.7% of the time. Much of the tobacco use occurred while people were simply passing time (16.1%), taking a break (10.7%), or thinking (30.7%).

In the limited number of occurrences of teen tobacco use ($N = 59$), the context of use indicated a different pattern from that described above. Teens were more likely than adults to be motivated by sadness (13.7%), rebelliousness (7.9%), disobedience (56.9%), peer pressure (3.9%), and bad news (11.9%); to find smoking relaxing (49.1%); to smoke to fit in (17.6%), be cool (43.1%), and look older (60.8%); and to smoke while socializing (54.9%) or taking risks (54.9%). Smoking by teenagers was also thought to be more relevant to the scene (59.3%) than smoking by adults.

Tobacco Use by Major Characters

In the 250 movies, we identified a total of 1,400 major characters, of whom 25% used tobacco. Among the major characters, male actors were much more likely to use tobacco than female actresses (Table 2). Stars whose names appeared on the front cover of the video box were also more likely to use tobacco than those who were not. No significant association was found between tobacco use and the age, race, or socioeconomic status of the character portrayed. Negative

TABLE 1

Types of Tobacco Use in the Top 250 Box Office Hits from 1988 to 1997

Tobacco used by type of occurrence	N	%
Total number of occurrences	2,296	100.0
Occurrences of character use	1,609	70.0
Cigarettes	1,112	48.4
Cigars	355	15.5
Pipe	70	3.0
Smokeless tobacco	58	2.5
Other/multiple	14	0.6
Occurrences of background use	687	29.9
Cigarettes	476	20.7
Cigars	112	4.9
Pipe	27	1.2
Smokeless tobacco	4	0.2
Other/multiple	68	3.0

TABLE 2

Major Characters Who Use Tobacco in the Top 250 Box Office Hits from 1988 to 1997

Characteristics	N	Use tobacco		P value
		N	%	
Actor				
Not listed on movie cover	914	208	22.8	0.010
Listed on movie cover	486	141	29.0	
Gender				
Male	986	278	28.2	0.000
Female	414	71	17.2	
Age				
<18	50	13	26.0	0.642
18-25	108	30	27.8	
26-49	920	247	26.9	
50+	240	55	22.9	
Race				
White	1,224	315	25.7	0.148
Black	126	24	19.1	
Hispanic	23	6	26.1	
Asian	12	0	0.0	
Native American	15	4	26.7	
Socioeconomic status				
Lower class	133	43	32.3	0.118
Middle class	484	114	23.6	
Upper class	624	163	26.1	
Total ^a	1,400	349	24.9	

^a Not all categories add up to 1,400 because certain attributes could not be determined for all characters.

consequences of tobacco use, including health, social, or legal consequences, were depicted for only 12 of the 349 major characters who used tobacco.

A substantial proportion of the characters engaged in alcohol use (41.8%), violent behavior (46.6%), illegal activities (25.6%), and dangerous acts (39.4%). Fewer major characters engaged in drug use (2.2%), sexual affairs (3.9%), reckless driving (10.5%), and gambling (2.9%). With the exception of reckless driving, characters who engaged in any one of these risk behaviors were more likely to use tobacco (Table 3).

The association among tobacco use, risk behaviors, and whether the stars were listed on the cover of the video box differed by gender. Male stars were significantly more likely to use tobacco if their name appeared on the front cover of the box (32.6% vs 25.8%, $P = 0.022$), but there was no significant difference for females. Among males, tobacco use was significantly associated with the portrayal of violent behavior (33.1% vs 22.8%, $P = 0.000$), dangerous acts (32.2% vs 25.1%, $P = 0.013$), and gambling (57.4% vs 27.3%, $P = 0.001$). Among females, tobacco use was associated with sexual affairs (45.5% vs 15.6%, $P = 0.000$), illegal activities (29.4% vs 15.4%, $P = 0.013$), and reckless driving (37.5% vs 15.9%, $P = 0.006$). Alcohol use and drug use were positively associated with tobacco use for both males and females.

DISCUSSION

Results from this content analysis demonstrate that the vast majority of movies portrayed tobacco use, but that it accounted for only a small proportion of total screen time. The amount of tobacco use was not associated with box office success or year of release. In most instances, tobacco use was not particularly relevant to the scene in which it was portrayed and rarely was it the major focus of the scene. Despite short tobacco use exposure times and possibly gratuitous use within scenes, two-thirds of the movies featured tobacco use by one or more major characters. Because tobacco use by a major character constitutes celebrity endorsement of the product [18], we believe that this measure may be a more important indicator of salient exposure than simply the number of times it appears on screen. R-rated movies contained the most tobacco use and were also more likely to feature a major character using tobacco.

The analysis of motivational factors indicates that characters used tobacco when they were feeling sad and pensive or when they were agitated and seeking relief from tension and stress. Characters also smoked when they were happy and carefree, such as when they were socializing or celebrating a successful event. Most of the on-screen smoking involved adults and represented an adult pattern of smoking. Teen or adolescent

TABLE 3

Tobacco Use and Other Risk Behaviors Portrayed by Major Characters

Risk behaviors	N	Use tobacco		P value
		N	%	
Alcohol use				
No	815	149	18.3	0.000
Yes	585	200	34.2	
Drug use				
No	1,369	328	24.0	0.000
Yes	31	21	67.8	
Violent behavior				
No	747	150	20.1	0.000
Yes	653	199	30.5	
Illegal activities				
No	1,042	242	23.2	0.012
Yes	358	107	29.9	
Sexual affair ^a				
No	1,345	327	24.3	0.008
Yes	55	22	40.0	
Reckless driving				
No	1,253	304	24.3	0.092
Yes	147	45	30.6	
Dangerous acts				
No	849	185	21.8	0.001
Yes	551	164	29.8	
Gambling				
No	1,359	328	24.1	0.000
Yes	41	21	51.2	

^a Defined as extramarital or extrarelationship affairs.

smoking occurred relatively infrequently, but when it did the motives and activities were consistent with a more socially motivated adolescent pattern of tobacco use. Although the motivations for smoking were consistent with societal use of tobacco, negative consequences or negative reactions to smoke were rarely shown.

Contrary to what one would expect based on the movie industry's assertion that smoking is used only to mimic real life, we found that the prevalence of tobacco use was not associated with the age, race, or socioeconomic status of characters. However, Hazan *et al.* [12] were correct in pointing out that the typical smoker in movies is white, male, middle-aged, and of higher socioeconomic status because most leading characters possess these traits. Consequently, smoking in movies is modeled by actors who most people aspire to be like—affluent, good looking, and powerful. This can give viewers, especially adolescents, a distorted picture of the "typical smoker" and may cause them to associate smoking with demographic characteristics that do not reflect real life. In essence, most movies are similar to tobacco advertisements in that they portray only positive images of beautiful stars using tobacco.

Major characters were significantly more likely to use tobacco if they engaged in other risk behaviors. The interaction among tobacco use, gender, and the portrayal of specific risk behaviors suggests that smoking may be used to characterize "tough" men and rebellious women—both highly stereotypical images of smokers in movies. The limited amount of screen time in which film makers must establish characters, plot, and other key story-telling elements essentially creates a need to rely on stereotypes and other "coded" activities to quickly convey information. It's possible that having a character light a cigarette is a visual "shorthand" for communicating that this character is tough. To the extent that youths find these stereotypes or images appealing, they may try to imitate a character's behavior, dress, and style [6]. Given that many adolescents are attracted to tough and rebellious images, the association with this character type is troubling because it links desired character traits with the behavior.

We found the overall prevalence of tobacco use among major characters to be less than that previously reported [12,13,19]. This could be explained by the different time period from which the movies were sampled or by the fact that the other studies coded fewer movies. Due to the high degree of variability of tobacco use in movies, it is difficult to obtain representative results by coding only a few movies per year. In this content analysis we coded two to five times the number of movies examined in other studies and we limited our sample to movies released over a 10-year period. We believe that this constitutes a representative sample, large enough to test for trend over time and to accu-

ately characterize tobacco use in movies during this period. However, the sample is limited to the top 25 box office hits per year and it is possible that these movies may not represent the content of movies with lower box office returns.

A major limitation of any content analysis is the inability to fully capture and communicate the contextual richness and nuances of movies. Movies simultaneously convey inputs on multiple sensory channels and the interpretation of any scene is influenced by material that precedes and follows it. For example, in one of the opening scenes of *Romeo and Juliet*, Leonardo DiCaprio (who plays Romeo) is shown smoking while pensively writing in his diary. This scene would be coded as a pensive moment with negative affect as a motivation for smoking, but this would not capture the fact that the smoking followed a scene in which Romeo's parents described his depression and alienation from them (something many adolescents can identify with). Nor would it capture the almost sensual nature in which the smoking was portrayed, which has to do with lighting, sound, and other factors that simply cannot be coded in a large sample of movies. We also recognize that details coded by an adult coder do not necessarily correspond to how adolescents would view or respond to a movie. To fully explore this, laboratory-based experimental studies are needed.

In summary, this content analyses provides a detailed picture of how tobacco use is depicted in modern cinema. It confirms that the vast majority (87%) of contemporary movies contain depictions of tobacco use (primarily cigarettes and cigars), although tobacco exposure accounts for only a small proportion of total screen time. Characters who smoke are usually adults and adult motivations are most likely to prompt the behavior. Despite increasing anti-smoking sentiments in our society, negative reactions to smoking are rarely shown and there is no evidence that smoking in movies has declined over the past decade. At a time when smoking is increasingly viewed as antisocial in our society, movies continue to depict smoking as socially acceptable. Smoking is portrayed as a way to relieve tension and something to do when socializing or confiding in others. It is also strongly linked with other high-risk behaviors. These images, coupled with the fact that the behavior is modeled by larger-than-life actors and actresses, communicate positive messages about a behavior that kills one-third of the people who engage in it [20]. Given these findings and that of other content analyses, it is clear that movies have the potential to have as much influence on adolescent smoking as other environmental exposures, such as family or friend smoking. Further research is needed to evaluate the impact movies have on adolescents' smoking behavior and whether there are ways to counter the positive images movies promote.

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